

In the outstanding Office Action, Claim 20 was rejected under 35 U.S.C. § 102(b) as anticipated by Arnston et al; and Claims 1-19 and 22-24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Arnston et al in view of Marshall et al.

Regarding the rejections of Claim 20 under 35 U.S.C. § 102(b) as unpatentable over Arnston et al and Claims 1-19 and 22-24 under 35 U.S.C. § 103(a) as unpatentable over Arnston et al in view of Marshall et al, independent Claim 1 has been amended to recite an abnormality diagnostic system capable of storing abnormality diagnostic data corresponding to an abnormal event detected in a vehicle, comprising a common data storage means for storing as the abnormality diagnostic data for a plurality of abnormal events, common data which is common against all abnormal events, which is supported in the specification at least at page 2, line 21 to page 3, line 3. Independent Claims 16, 20 and 21 have been amended in a similar fashion.

In a non-limiting example, Figure 6A shows the freeze-frame data storing region can store four items of freeze-frame data. The freeze-frame data storing region is divided into a common data section for storing the common data and an inherent data section for storing the inherent data for each of the frames (see specification at page 19, lines 12-21). Here, the types of data of the second common data $\alpha t2$, $\beta t2$, and $\gamma t2$ and the first common data $\alpha t1$, $\beta t1$, and $\gamma t1$ are the same. However, because the obtained times of the first and second abnormal events are different, the contents of the data are different. The same applies to the third and fourth abnormality detection (see specification at page 20, lines 20-23).

In this manner, whenever an abnormality is detected, the diagnostic code and the freeze-frame data are written to the next vacant location in each storing region. Therefore, the diagnostic codes and freeze-frame data are stored in the order in which the abnormalities were detected (see specification at page 21, lines 11-16).

By contrast, Arnston et al describes a system in which the parameters required for diagnosis (e.g., the crank speed, etc.) are changed according to a component of the engine. For example, in the system described by Arnston et al only oil pressure and water temperature are considered when diagnosing the oil pump. However, according to the claimed invention, all of the common data which is common against all abnormal events are stored as abnormality diagnostic data. Marshall et al is also silent regarding an abnormality diagnostic system in which all of the common data are stored as abnormality diagnostic data. Therefore, combining Arnston et al and Marshall et al do not result in the claimed invention.

Accordingly, it is respectfully submitted independent Claims 1, 16, 20 and 21 and each of the claims depending therefrom are allowable.

In addition, Claims 1, 4-16 and 18-24 have been amended to correct minor informalities and conform to standard U.S. claim drafting practice. It is believed no new matter has been added.

Further, new Claims 25-51 have been added to set forth the invention in a varying scope. In particular, Claim 25 recites an abnormality diagnostic system according to Claim 1, wherein the common data includes data indicative of behavior of the vehicle, and wherein the inherent data includes data of a component which relates to the abnormal event. Independent Claim 29 includes similar features. Support for new Claims 25 and 29 can be found in the specification at least at page 4, lines 6 and 7, and at page 5, lines 3-7. Also, Claim 26 recites an abnormality diagnostic system according to Claim 1, wherein the inherent data includes data of a component which relates to the abnormal event. Support for new Claim 26 can be found in the specification at least at page 5, lines 3-7. In addition, Claim 27 recites an abnormality diagnostic system according to Claim 1, wherein the inherent data and common data corresponding to successively detected abnormal events are stored in an order in which the abnormal events are detected. Support for new Claim 27 can be found in the specification

at least at page 20, lines 9-13. Further, Claim 28 recites an abnormality diagnostic system according to claim 1, wherein in addition to storing data corresponding to abnormalities in the order in which the abnormalities are detected, numbers or symbols corresponding to the order are also stored together with a diagnostic code and a freeze-frame data. Support for new Claim 28 can be found in the specification at least at page 21, lines 11-16.

In addition, new Claims 30-51 are similar to Claims 1-15 and 22-28, but have been drafted to not use means-plus-function terminology. It is believed no new matter has been added.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance, and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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IN THE CLAIMS

Please amend Claims 1, 4-16 and 18-24 as follows:

--1. (Twice Amended) An abnormality diagnostic system capable of storing abnormality diagnostic data corresponding to an abnormal event detected in a vehicle, comprising:

a common data storing section for storing as the abnormality diagnostic data for a plurality of abnormal events, common data which is common against all abnormal events irrespective of a difference in the abnormal events; and

an inherent data storing section for storing as the abnormality diagnostic data, inherent data which is inherent to each of the abnormal events[, the inherent data and common data corresponding to successively detected abnormal events being stored in order in which the abnormal events were detected].

4. (Amended) An abnormality diagnostic system according to claim 2, wherein a data length of the inherent data is constant irrespective of a difference in the abnormal events.

5. (Amended) An abnormality diagnostic system according to claim 2, wherein the inherent data [comprises] includes a plurality of data, and a data length of each data is constant.

6. (Amended) An abnormality diagnostic system according to claim 2, wherein the storing means includes a common storing region in which each of the inherent data can be commonly stored, and

wherein the writing means writes the inherent data to the common storing region.

7. (Amended) An abnormality diagnostic system according to claim 6, wherein the common data includes data indicative of a behavior of the vehicle.

8. (Amended) An abnormality diagnostic system according to claim 6, wherein a data length of the inherent data is constant irrespective of a difference in the abnormal events.

9. (Amended) An abnormality diagnostic system according to claim 6, wherein the inherent data [comprises] includes a plurality of data, and a data length of each data is constant.

10. (Amended) An abnormality diagnostic system according to claim 1, wherein the common data includes data indicative of a behavior of the vehicle.

11. (Amended) An abnormality diagnostic system according to claim 10, wherein a data length of the inherent data is constant irrespective of a difference in the abnormal events.

12. (Amended) An abnormality diagnostic system according to claim 10, wherein the inherent data [comprises] includes a plurality of data, and a data length of each data is constant.

13. (Amended) An abnormality diagnostic system according to claim 1, wherein a data length of the inherent data is constant irrespective of a difference in the abnormal events.

14. (Amended) An abnormality diagnostic system according to claim 13, wherein the inherent data [comprises] includes a plurality of data, and the data length of each data is constant.

15. (Amended) An abnormality diagnostic system according to claim 1, wherein the inherent data [comprises] includes a plurality of data, and a data length of each data is constant.

16. (Twice Amended) An abnormality diagnostic data storing method for storing, in a [storing means] memory, abnormality diagnostic data corresponding to an abnormal event detected in a vehicle, comprising [the steps of]:

judging an abnormal event when an abnormality is detected;
selecting at least inherent data which is inherent to the abnormal event; and
storing selected inherent data in the [storing means] memory as abnormality diagnostic data corresponding to the abnormal event for a plurality of abnormal events, together with common data which is common against all abnormal events irrespective of a difference in the abnormal events[, the inherent data and common data corresponding to successively detected abnormal events being stored in order in which the abnormal events were detected].

18. (Amended) An abnormality diagnostic data storing method according to claim 16, wherein a data length of the inherent data is constant irrespective of a difference in the abnormal events.

19. (Amended) An abnormality diagnostic data storing method according to claim 16, wherein the inherent data [comprises] includes a plurality of data, and a data length of each data is constant.

20. (Amended) An abnormality diagnostic system capable of storing abnormality diagnostic data corresponding to an abnormal event detected in a vehicle, comprising:

a processor for identifying the detected abnormal event with a diagnostic code;
a common data storing section for storing as the abnormality diagnostic data for a plurality of abnormal events, common data which is common against all abnormal events irrespective of a difference in diagnostic codes; and

an inherent data storing section for storing data selectively obtained in accordance with the diagnostic code, the data being identified as inherent data to the abnormal event.

21. (Amended) An abnormality diagnostic data storing method for storing, in a [storing means] memory, abnormality diagnostic data corresponding to an abnormal event detected in a vehicle, comprising [the steps of]:

identifying a detected abnormal event with a corresponding diagnostic code;

selecting, based on the diagnostic code, at least inherent data which is inherent to the abnormal event; and

storing the selected inherent data in the [storing means] memory as abnormality diagnostic data corresponding to the abnormal event for a plurality of abnormal events, together with common data which is common against all abnormal events irrespective of a difference in diagnostic codes.

22. (Amended) An abnormality diagnostic system according to [Claim] claim 1, wherein the common data and the inherent data corresponding to detected abnormal events are stored in the common data storing section and the inherent data storing section respectively, as long as there are unused memory locations in the common data storing section and the inherent data storing section.

23. (Amended) An abnormality diagnostic system according to [Claim] claim 1, wherein the common data and the inherent data corresponding to a first abnormal event [is] are stored in a first memory area which is different from a second memory area in which the common data and the inherent data corresponding to a second abnormal event [is] are stored.

24. (Amended) An abnormality diagnostic system according to [Claim] claim 1, wherein the common data and inherent data corresponding to successively occurring and substantially same abnormal events, [is] are stored in the common data and inherent data storing section for each of the substantially same abnormal events.--

25-51. (New).